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EDITOR

The 1939 Poliomyelitis Epidemic in Los Angeles County

By H. O. Swartout, M.D., Ph.P.H., Director, Bureau of Communicable Disease Control,
Los Angeles County Health Department

After the year 1938, with the lowest poliomyelitis incidence of any year in more than a decade, the early months of 1939 gave no warning that an epidemic was on its way. In average nonepidemic years a definite increase in poliomyelitis manifests itself near the end of May. The incidence remains comparatively, though somewhat irregularly, high from about the middle of June until about the middle of October, when there comes a fall corresponding to the spring rise. From the first of December until the first of the next May cases of poliomyelitis are usually rare. This was true from December, 1938, to May, 1939.

The 1939 spring rise came at the usual time, and for some weeks was not enough greater than normal to cause alarm; but by the first of July cases were becoming so numerous as to suggest that an epidemic might be developing. When the wave had passed, we could look back and study it; and this view showed that the fall came at about the normal date, as the rise had done. It seems likely, therefore, that the 1939 epidemic was not due to any imported infection coming at an unusual time but was the result of our own endemic reservoir operating upon a population of more than average susceptibility. That the susceptibility may well have been above average may be judged from the fact that the last epidemic of any considerable magnitude came five years previously.

Though they are given separately in Table I as a matter of information, it could serve no good purpose to analyze separately the cases occurring in the six different health jurisdictions in the county, since all of them compose, in fact, one great metropolitan area with surrounding and interspersed countryside, throughout which travel and consequent intermingling of population is very free. Furthermore, in none of the separate jurisdictions, with the possible exception of Los Angeles City and the Los Angeles County Health Department area, were the cases numerous enough to make a statistical analysis of much significance. Collection of data from so many different health jurisdictions and from about 30 private physicians, however, together with the press of other duties on everybody having a part in the collection, has occasioned a great deal of delay; and this report is undesirably late.

The first impulse, of course, was to compare the 1939 epidemic with that of 1934. In general, the 1939 epidemic struck less than one-fifth as many people as did that of five years before; but so far as loss of life is concerned it struck them more than five times as hard. Furthermore, both the beginning and the peak of the 1934 epidemic wave came at least a month earlier in the year than corresponding parts of the 1939 wave. More detailed discussion of the cases in the recent epidemic will be limited to those which can properly be considered as a part of the epidemic wave—that is, those with onset dates during the weeks ending from June 3 to October 28. The total number of such cases studied was 321, of which 21 proved fatal, giving a case fatality rate of 6.5 per cent. See Table II. The case fatality rate of the 1934 epidemic was well below 1 per cent.

Being so severe, on the average, a very large proportion of the cases were hospitalized, the number of those receiving hospital care being 290, or 90.3 per cent of the cases that occurred during the epidemic. See Table II. With very few exceptions, all hospitalized cases received convalescent serum as a part of the treatment, the usual dose being 100 c.c. Hospital physicians have made a thorough study of serum treatments and their effects, and may wish to publish some statement about them, so this subject will be discussed no further here. Respirators were available for all cases that really needed them, though at times the demand was on a level with the supply. The best known modern methods were employed during the acute stage of the disease, with suitable orthopedic measures later, to minimize crippling in cases with paralysis; but it is beyond the scope of this report to discuss the final outcome of such cases.

Table I and the chart present a simple picture of the 1939 epidemic wave, the numbers of cases as they occurred week by week being shown in the table.

TABLE I

Los Angeles County 1939 Poliomyelitis Epidemic Cases, Onset Dates During Weeks Ending June 3 to October 28

Week Ending	Beverly Hills City	County Health Department area	Long Beach City	Los Angeles City	Pasadena City	South Pasadena City	Total	5-Year Nonepidemic Average (Tri-central Means)
June 3	--	1	--	--	--	--	1	2.4
June 10	--	2	--	1	--	--	3	4.9
June 17	--	--	--	4	1	--	5	6.3
June 24	--	4	--	4	--	--	8	6.9
July 1	1	5	--	6	--	--	12	6.0
July 8	--	9	--	6	--	--	15	6.5
July 15	--	11	2	9	3	--	25	6.5
July 22	--	5	1	3	1	1	11	6.2
July 29	--	8	3	7	--	1	19	5.6
August 5	1	5	3	15	--	--	24	5.7
August 12	1	10	2	15	1	--	29	5.8
August 19	--	6	3	11	--	--	20	6.9
August 26	--	13	2	17	--	--	32	7.3
September 2	--	6	--	7	1	--	14	7.4
September 9	--	11	2	11	--	1	25	6.6
September 16	1	9	1	11	1	--	23	6.1
September 23	--	12	--	4	1	--	17	6.3
September 30	--	1	2	9	1	--	13	5.9
October 7	1	4	1	7	--	--	13	5.7
October 14	--	--	--	3	--	--	3	4.8
October 21	--	4	1	1	--	--	6	3.9
October 28	--	--	1	2	--	--	3	3.2
	5	126	24	153	10	3	321	

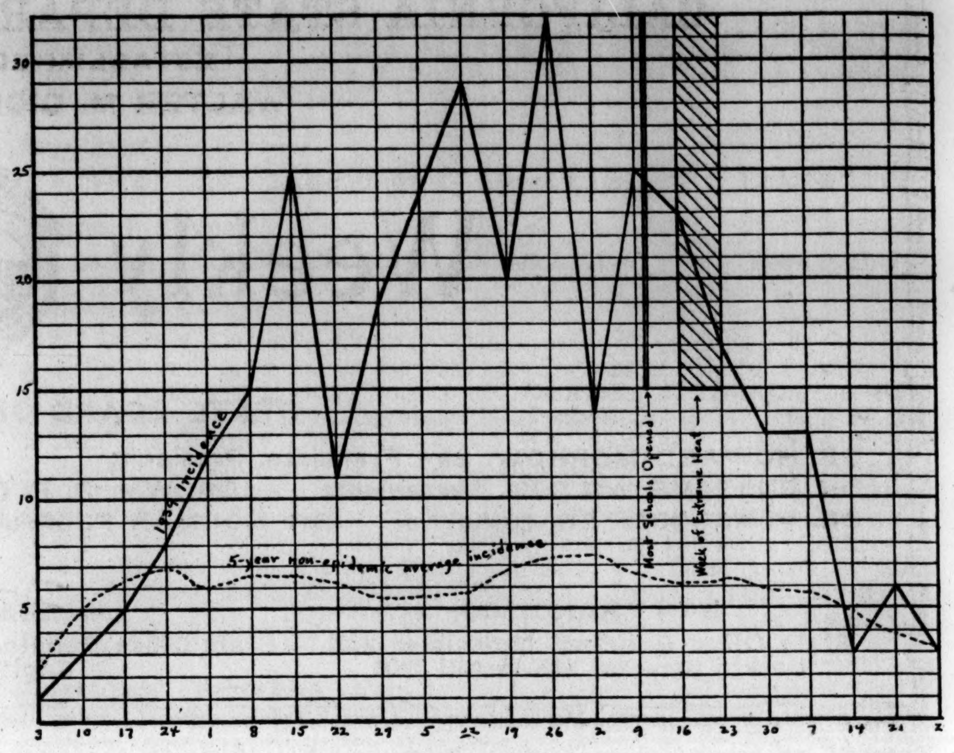

TABLE II

Los Angeles County 1939 Poliomyelitis Epidemic Hospitalization and Case Fatality Rates

	Beverly Hills City	County Health Department Area	Long Beach City	Los Angeles City	Pasadena City	South Pasadena City	Total
Cases	5	126	24	153	10	3	321
Hospitalized	3	115	21	144	5	2	290
Per Cent Hospitalized	60.0	91.3	87.5	94.1	50.0	66.7	90.3
Deaths	0	8	4	8	1	0	21
Case Fatality Rate	0.0	6.3	16.7	5.2	10.0	0.0	6.5

Table III shows that the age-group chiefly affected was that 5-9 years. More than two-thirds of all cases occurred in people under 15. An unusually large proportion of cases were bulbar,—12.2 per cent. Muscle weakness or paralysis, not counting encephalitic or bulbar involvement, developed in more than half of all the cases.

TABLE III

Los Angeles County 1939 Poliomyelitis Epidemic Cases by Age-Group and Type

	Age-Groups											
Type	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total	Per Cent of Total
Encephalitic	3	2	1	--	--	--	--	--	--	1	7	2.2
Bulbar	4	6	16	6	4	1	2	--	--	--	39	12.2
With weakness or paralysis	29	38	35	26	9	12	7	3	2	--	161	50.2
Without weakness or paralysis	13	45	27	19	4	5	1	--	--	--	114	35.4
Total	49	91	79	51	17	18	10	3	2	1	321	
Per cent of total	15.3	28.4	24.6	15.9	5.3	5.6	3.1	0.9	0.6	0.3	--	100.0

TABLE IV

Los Angeles County 1939 Poliomyelitis Epidemic Cases by Age and Sex

Sex	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
Male	30	57	54	34	11	10	5	1	1	1	204
Female	19	34	25	17	6	8	5	2	1	--	117
Total	49	91	79	51	17	18	10	3	2	1	321

TABLE V

Los Angeles County 1939 Poliomyelitis Epidemic Deaths by Age and Sex

Sex	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
Male	1	1	8	1	2	1	1	--	--	1	16
Female	--	1	2	1	1	--	--	--	--	--	5
Total	1	2	10	2	3	1	1	--	--	1	21

As has been the general rule in previous epidemics in various parts of the world, there were many more cases among males than among females. This sex difference was not significantly manifest in any particular age-group, however, more than in another. The preponderance of deaths among males was even more marked than the excess of cases; but, while the greatest number of cases came in the age-group 5-9, deaths were much more numerous in the age-group 10-14.

TABLE VI

Los Angeles County 1939 Poliomyelitis Epidemic Cases and Deaths by Race

	White	Mexican	Black	Yellow	Total
Cases	304	9	7	1	321
Deaths	21	0	0	0	21

In Los Angeles County there is quite a large Mexican element in the population. Poliomyelitis cases among Mexicans, however, were remarkably scarce. If they had occurred in the same proportion as among white people there would have been between 50 and 75 cases instead of only 9.

While poliomyelitis was comparatively severe in 1939 secondary cases were few. In each of two different families two children were attacked at intervals such that one might have picked up the infection from the other. In another family both husband and wife developed the disease, one nine days after the other. In a group of people intimately associated with each other, but belonging to different families, three persons were stricken at intervals which suggested contagion. Two members of boys' camp had onsets of poliomyelitis ten days apart.

The 1939 epidemic gave further opportunity to test the effects of certain types of treatment, but epidemiologically it taught us very little that was new. There is a general impression that *undue fatigue* was a factor in preparing the way for the infection in many cases, and a warning against it would be in place if another epidemic should threaten. As is graphically shown by the chart on a previous page, however, the opening of school did not check the downward trend of the epidemic wave, the peak of which had been passed two or three weeks before. Neither did a week of extreme heat which came shortly after the schools opened. The number and variability of the factors entering into the production of this epidemic wave of poliomyelitis were extremely difficult, and probably impossible, to determine; and it can not help us much in foretelling the time, height or character of future waves.

A. P. H. A. TO MEET IN DETROIT

The sixty-ninth annual meeting of the American Public Health Association will be held in Detroit October 8th to 11th. The meeting will bring 3500 public health officials together for a series of scientific meetings that will cover all phases of health promotion and protection. An institute on health education is scheduled for the period immediately preceding the convention.

Many allied and related organizations will meet in conjunction with the association; among them the American School Health Association, International Society of Medical Health Officers, Association of Women in Public Health and many others. It is hoped that a large number of public health workers in California may be able to attend.

SOUND NUTRITION—SOUND TEETH

In the twenty-fifth annual report of the Forsyth Dental Infirmary, the following comment appears: "The evidence is cumulative that nutritional guidance affords the most notable step in prevention of tooth disintegration. Searching inquiry has shown not only that the soundest teeth and most normal jaws accompany a record of sound nutrition and health history from before birth to the moment of examination, but that diametrically opposite conditions follow poor nutrition. Change the nutritional state and the oral state changes accordingly. Over and over again this has been found to be the case. Two considerations are entertained in the nutritional examinations and recommendations—one the selection of food, and the other the manner in which the organism utilized the dietary factors. The examination is made on the basis of the diet as a whole rather than on that of single factors. Habits are noted principally for their effects on the physiological processes. Tables of food values or other mathematical formulas can not be considered as fixed but rather as labile standards subject to a great variety of biological influences, among which may be mentioned rate of growth, endocrine activity, intestinal rate, idiosyncrasies, and many other physiological conditions. It is interesting to note that general and dental improvement go hand in hand.

MORBIDITY

Complete Reports for Following Diseases for Week Ending March 30, 1940

Chickenpox

683 cases: Alameda 17, Albany 1, Berkeley 7, Oakland 70, San Leandro 4, El Cerrito 1, Pittsburg 6, Fresno County 7, Coalinga 4, Fresno 8, Sanger 1, Kern County 22, Bakersfield 12, Delano 1, Kings County 11, Hanford 18, Los Angeles County 39, Alhambra 2, Burbank 1, Claremont 3, Compton 2, Culver City 11, El Segundo 1, Glendale 15, Huntington Park 1, Long Beach 61, Los Angeles 74, San Gabriel 4, San Marino 1, Santa Monica 1, South Pasadena 1, Lynwood 9, South Gate 2, Bell 2, Madera County 1, Madera 1, Merced County 22, Monterey County 4, King City 2, Monterey 1, Orange County 2, Brea 9, Newport Beach 1, Santa Ana 4, Seal Beach 3, Laguna Beach 11, Riverside County 4, Beaumont 2, Blythe 2, Elsinore 1, Riverside 5, Sacramento 10, Redlands 5, San Bernardino 1, San Diego County 11, La Mesa 10, National City 1, San Diego 5, San Francisco 44, San Joaquin County 1, Stockton 5, Paso Robles 1, San Luis Obispo 1, San Mateo County 1, Burlingame 8, Daly City 1, San Bruno 1, San Mateo 3, San Carlos 2, Santa Barbara County 14, Santa Clara County 1, Palo Alto 1, San Jose 13, Santa Cruz County 1, Redding 3, Siskiyou County 1, Solano County 3, Rio Vista 2, Sonoma County 4, Santa Rosa 2, Sutter County 3, Red Bluff 6, Tulare County 5, Ventura County 3, Ojai 7, Yolo County 5, Woodland 1, California 2.*

Diphtheria

14 cases: Fresno County 1, Los Angeles County 3, Los Angeles 1, Marin County 1, Sacramento 1, San Diego 2, San Francisco 1, San Luis Obispo County 2, Sonoma County 1, Sutter County 1.

German Measles

25 cases: Alameda County 1, Alameda 1, Berkeley 2, Oakland 2, Bakersfield 2, Long Beach 3, Pasadena 2, Fullerton 1, Santa Ana 1, San Clemente 1, Sacramento 1, San Diego 3, San Francisco 1, San Joaquin County 1, Paso Robles 1, San Mateo County 1, Vallejo 1.

Influenza

186 cases: Albany 1, Berkeley 1, Oakland 1, Kern County 4, Kings County 99, Los Angeles County 8, Alhambra 1, Huntington Park 1, Long Beach 5, Los Angeles 26, Torrance 1, Banning 25, San Francisco 1, Sonoma County 2, Tulare County 4, Tulare 6.

Malaria

2 cases: San Diego 1, Yuba County 1.

Measles

598 cases: Albany 1, Oakland 2, Butte County 3, Fresno County 15, Coalinga 2, Fresno 3, Imperial County 2, El Centro 1, Kern County 165, Bakersfield 29, Delano 1, Kings County 9, Los Angeles County 5, Long Beach 2, Los Angeles 20, Pasadena 2, San Fernando 4, Bell 1, Merced County 1, Los Banos 1, Monterey County 2, Carmel 2, Orange County 1, Santa Ana 2, Sacramento 11, San Diego County 85, Chula Vista 1, El Cajon 2, Escondido 27, La Mesa 1, National City 10, San Diego 103, San Francisco 2, San Joaquin County 19, Lodi 3, Stockton 12, Siskiyou County 25, Yreka 2, Rio Vista 1, Ventura County 1, Santa Paula 1, Yolo County 11, Davis 1, Winters 1, Woodland 3.

Mumps

467 cases: Alameda County 5, Alameda 1, Berkeley 11, Oakland 14, San Leandro 1, Butte County 6, Gridley 2, Fresno County 23, Clovis 1, Fresno 1, Sanger 2, Selma 4, Eureka 2, Kern County 19, Bakersfield 9, Kings County 15, Hanford 9, Los Angeles County 52, Alhambra 3, Burbank 3, Culver City 3, Glendale 3, Long Beach 24, Los Angeles 15, Pasadena 2, San Fernando 1, South Gate 1, Signal Hill 3, Gardena 1, Madera County 25, Chowchilla 1, Monterey County 1, Salinas 1, Calistoga 2, Orange County 9, Anaheim 1, Fullerton 9, Orange 4, Santa Ana 3, Laguna Beach 2, Riverside County 1, San Bernardino County 2, San Diego 3, San Francisco 32, San Joaquin County 7, Manteca 1, Stockton 5, San Luis Obispo County 3, Paso Robles 3, San Luis Obispo 1, San Mateo County 2, Burlingame 2, Redwood City 1, San Mateo 5, Atherton 1, Menlo Park 22, Santa Barbara County 1, Santa Clara County 16, Mountain View 7, Palo Alto 12, San Jose 1, Santa Cruz County 1, Shasta County 1, Siskiyou County 2, Yreka 19, Rio Vista 1, Petaluma 1, Sutter County 2, Tulare County 3, Yolo County 10, Marysville 5.

Pneumonia (Lobar)

63 cases: Alameda 1, Berkeley 1, Oakland 2, Fresno 2, Los Angeles County 6, Hermosa 1, Long Beach 5, Los Angeles 22, Pasadena 2, Pomona 1, Torrance 2, South Gate 1, Bell 1, Riverside 1, Indio 2, San Bernardino County 2, San Diego 1, San Francisco 3, San Joaquin County 1, Siskiyou County 1, Yreka 1, Dixon 1, Sonoma County 1, Sutter County 1, Tuolumne County 1.

Scarlet Fever

156 cases: Oakland 1, San Leandro 1, Colusa 1, Antioch 2, Fresno County 1, Humboldt County 1, Imperial County 3, Kern County 4, Taft 1, Kings County 2, Los Angeles County 21, Alhambra 2, Arcadia 1, El Segundo 1, Hermosa 1, Inglewood 1, Long Beach 2, Los Angeles 29, Monrovia 1, Pomona 1, Redondo 1, San Gabriel 1, Whittier 1, Torrance 3, Lynwood 3, Hawthorne 1, South Gate 7, Marin County 1, Napa 1, Anaheim 1, Fullerton 1, Riverside County 6, Corona 1, Riverside 2, Indio 1, Sacramento County 1, Sacramento 5, San Bernardino County 5, Ontario 1, Redlands 1, San Diego 7, San Francisco 11, San Joaquin County 1, Shasta County 1, Redding 1, Vacaville 1, Vallejo 1, Sonoma County 2, Tehama County 1, Tulare County 1, Ventura County 4, Ventura 1, Davis 1, California 2.*

Smallpox

8 cases: Chico 6, Sutter County 2.

Typhoid Fever

3 cases: Kern County 1, Tulare County 1, California 1.*

Whooping Cough

287 cases: Alameda 2, Albany 2, Oakland 4, Gridley 1, Colusa County 3, Fresno County 20, Coalinga 2, Fresno 5, Sanger 1, Kern County 12, Bakersfield 3, Kings County 6, Los Angeles County 28, Alhambra 1, Compton 1, Huntington Park 2, Long Beach 2, Los Angeles 16, Pasadena 3, San Fernando 1, Whittier 2. Lynwood 1, Bell 3, Merced County 3, Monterey County 2, Orange County 5, Placentia 3, Riverside County 8, Corona 4, Sacramento 14, Redlands 1, San Bernardino 1, San Diego 8, San Francisco 11, San Joaquin County 2, San Mateo County 3, Daly City 4, Menlo Park 1, Santa Barbara County 8, Santa Clara County 13, Los Gatos 5, Mountain View 1, Palo Alto 1, San Jose 19, Sunnyvale 6, Santa Cruz County 16, Santa Cruz 2, Sonoma County 16, Santa Rosa 4, Santa Paula 1, Yolo County 4.

Meningitis (Epidemic)

3 cases: Humboldt County 1, Torrance 1, San Francisco 1.

Dysentery (Amoebic)

2 cases: Los Angeles 1, Stockton 1.

Dysentery (Bacillary)

5 cases: Fresno County 1, Los Angeles, 3, Bell 1.

Poliomyelitis

3 cases: Fresno 1, Merced County 1, San Diego 1.

Trachoma

2 cases: Los Angeles 1, Tulare County 1.

Paratyphoid Fever

One case: Orange County.

Jaundice (Epidemic)

One case: Shasta County.

Food Poisoning

6 cases: Los Angeles 1, Madera County 1, San Francisco 4.

Undulant Fever

2 cases: Los Angeles County 1, Compton 1.

Tularemia

One case: Monterey County.

Coccidioidal Granuloma

One case: Kings County.

Epilepsy

46 cases: Oakland 3, Gridley 1, Fresno 1, Los Angeles County 1, Burbank 1, Glendale 1, Los Angeles 18, Pasadena 1, Gardena 1, Napa County 2, San Bernardino 1, San Diego 1, San Francisco 13, Stockton 1.

Rabies (Animal)

7 cases: Los Angeles County 2, Los Angeles 1, Corona 2, Daly City 1, Tulare County 1.

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* Cases charged to "California" represent patients ill before entering the state or those who contracted their illness traveling about the state thorughout the incubation period of the disease. These cases are not chargeable to any one locality.

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